411 bow was 68 in., width at grip 1 3/4 in., at tips 3/4-in. SM denied that Tübatulabal formerly ever
●[176] bowed in grip; FC very probably had introduced this feature.

Boys used small plain willow bows and willow
[462] arrows "before they began regular hunting" (SM). Bows, arrows made by men only.

Arrows.- War arrows (pa·hal) were 34-36 in. long, with wooden foreshaft (wawpit), some 8 in. long, made from hard wood set into cane mainshaft made from stalks of cane (paha·bĭ·l), same variety as that from which women obtained sweets (p. 19). Mainshafts also sometimes made from wood. Cane mainshaft (u·gat) straightened by being gently rolled at joints in round groove and over shallow incisions of heated stone arrow straightener (u·gišt). Mainshaft notched at upper end for insertion of bowstring; foreshaft split at end for insertion of arrowhead. War arrows had 3 vanes, square-trimmed, 1 in. wide, set on spirally and attached at each end with sinew; "if only 2 feathers were put on, the arrow didn't shoot straight, it went sideways" (SM). FC's arrows nevertheless had 2 vanes, set on spirally. Feathers from eagles, crows, owls, 3 varieties of hawks among those used. Arrow-
[324] heads (kĭyi·l) were flaked from obsidian (tu·gu··pĭl tĭnt, black rock), obtained near Mt. Whitney (SM); from bluish gray rock procured in mts. (SM), at Koso (FP); from a red rock (flint?) obtained near Tejon or on Mohave desert. Stone "cooked" first in fire, then broken into small
[412] pieces (FP). Deer-bone awl used to flake arrowheads; palm of left hand protected with piece of buckskin. Heads varishaped (fig. 7), "because some men liked this kind, some that" (ES), but all heads shouldered. Beautifully shaped head (fig. 7), 3 1/4 in. long, 1 in. wide at top, found by FC on old battlefield on Nichols peak, in s. border of Tübatulabal area; SM said this
[317] probably head for war arrow, as heads for such often 6 in. long(!). Asphalt (tu·šanat) used to set heads into foreshaft; no mention made of sinew lashings. Poison (pohil), source of which was unknown to informants, said to have been used on both war, hunting arrowheads (MM); only on hunting arrowheads (SM).

Hunting arrows (šu·mu·na·l), for use on large game, similar to war arrows save that they were 48 in. long, with 9-in. wooden foreshaft and were often tipped with smaller, black obsidian heads which were inserted rather loosely into foreshaft so that shaft fell out after animal was shot, leaving head firmly embedded; or if shaft did not fall out, it could be pulled out easily, head then cut out with stone knife.

Arrows of foregoing type used with sinew-backed bow; with willow bow cane arrows (šu·mu··na·l), 40 in. long, 2-3-vaned, tipped with wooden foreshaft, point of which had been sharpened by rubbing on rough rock, used to shoot rabbits, etc. For birds, shorter cane arrows with pointed